AMERICAN COUNCIL ON EXERCISE

Barefoot Training

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CREATOR - ViPR

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OBJECTIVES

- IDENTIFY THE IMPORTANCE OF THE FEET IN HUMAN FUNCTION
- CLARIFY HOW THE GROUND IS CRUCIAL TO FOOT FUNCTION
- EXPLAIN HOW FOOTWEAR MAY ALTER HUMAN FUNCTION
- PROVIDE GUIDELINES WHEN CHOOSING FOOTWEAR

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FACTS

- THE TYPICAL WORKER WALKS UP TO 7.5 MILES A DAY

- A BUSY HOUSEKEEPER WALKS CLOSE TO 10 MILES (THE CUMULATIVE IMPACT ON THE FOOT IS SEVERAL HUNDRED TONS)

- THE AVERAGE PERSON WALKS SOME 70,000 MILES IN A LIFETIME

- ABOUT 50% OF ALL ADULTS SAY THAT THEIR FEET HURT


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Joint Position
VS.
Joint Motion

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1/4 OF BONES IN BODY
150 LIGAMENTS
33 JOINTS (most on Vertical plane)
20 MUSCLES
TALUS IS UNIQUE
DISTINCT ARCHES
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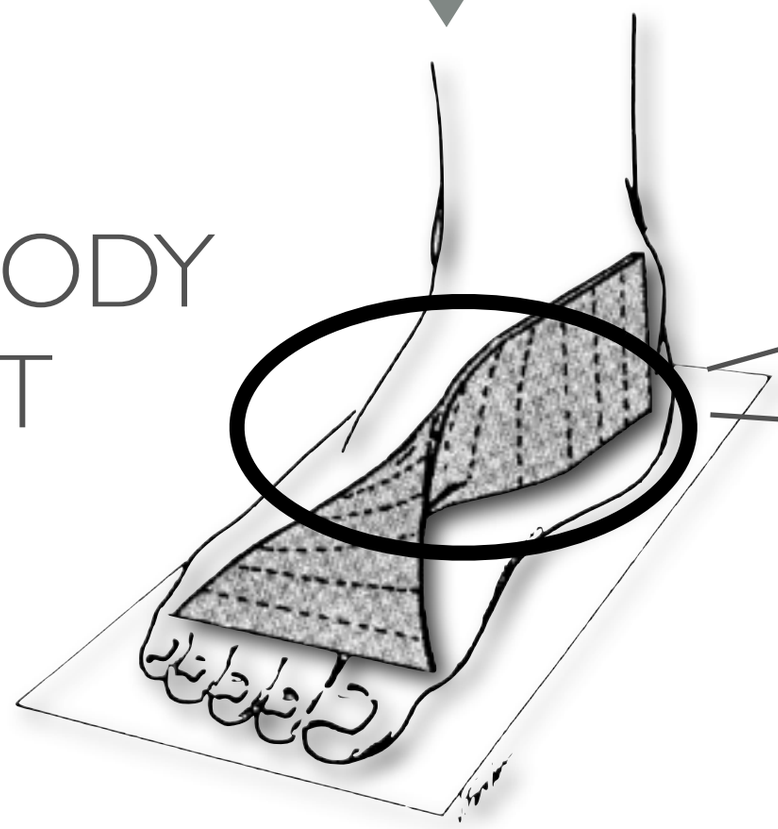
Rigid or Mobile?

GRAVITY

AGGREGATE BODY MOVEMENT



- RIGID LEVER

- MOLDABLE ADAPTOR

GRF

Chronic Collapsing Arch

- Plantar Fasciitis
- Compartment Syndrome / Shin Splints
- Hyper-extended Knee
- Excessive Lordosis
- Breakdown of the structural support (connective tissue mediated) = more stress on the Psoas Major / Lateral Hip Rotators

Primary Curve

Secondary Curve

Primary Curve

Secondary Curve

"To him whose feet hurt, everything hurts"
- Reputed remakes by Socrates

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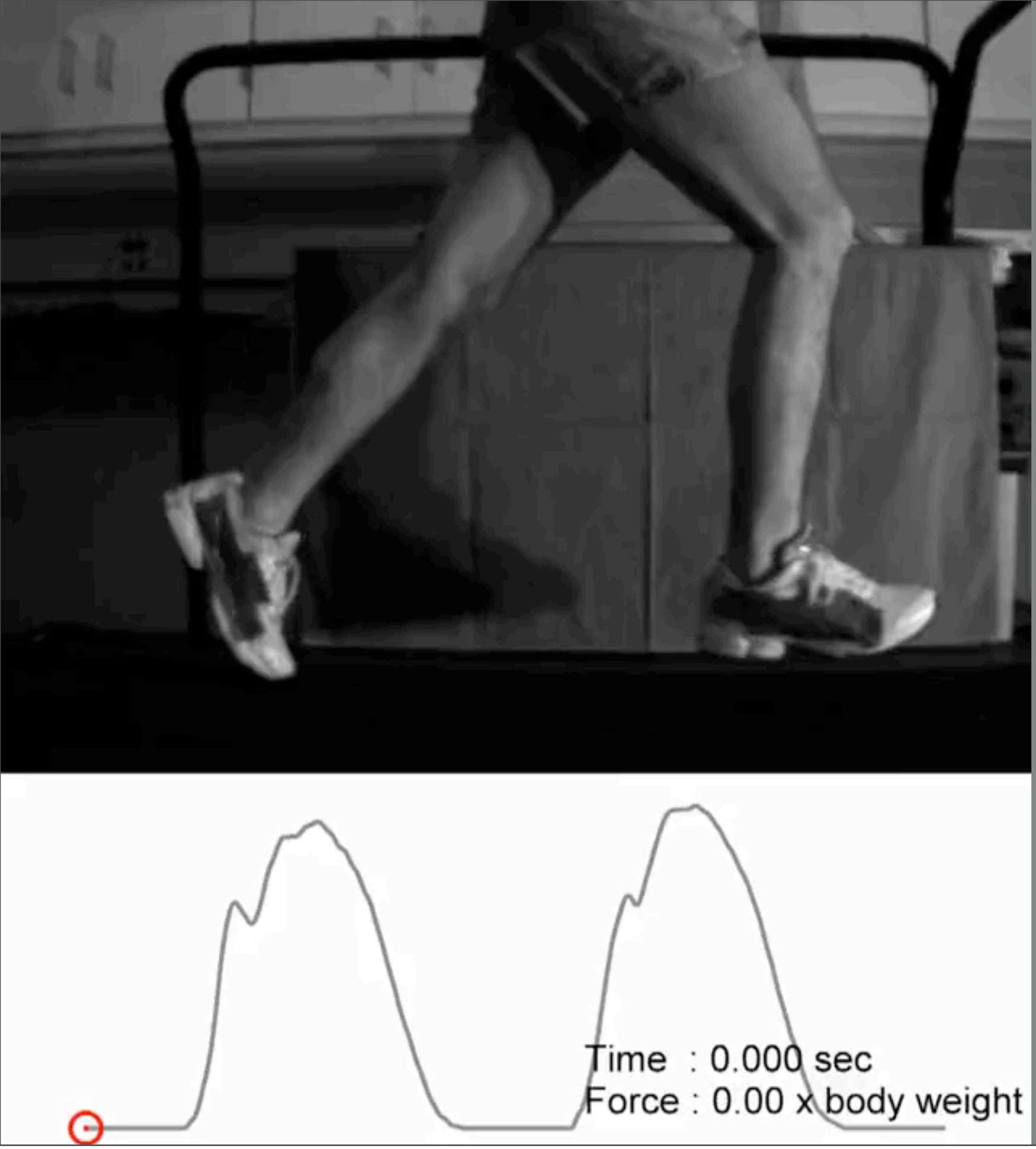
RESEARCH

KINETIC PULSE EFFECT WITH VARIOUS FOOTWEAR

DANIEL LIEBERMAN
PROFESSOR HUMAN EVOLUTIONARY BIOLOGY
HARVARD UNIVERSITY



HEEL STRIKE WITH SHOES

(N.B THESE TEST ARE PERFORMED ON A TREADMILL)

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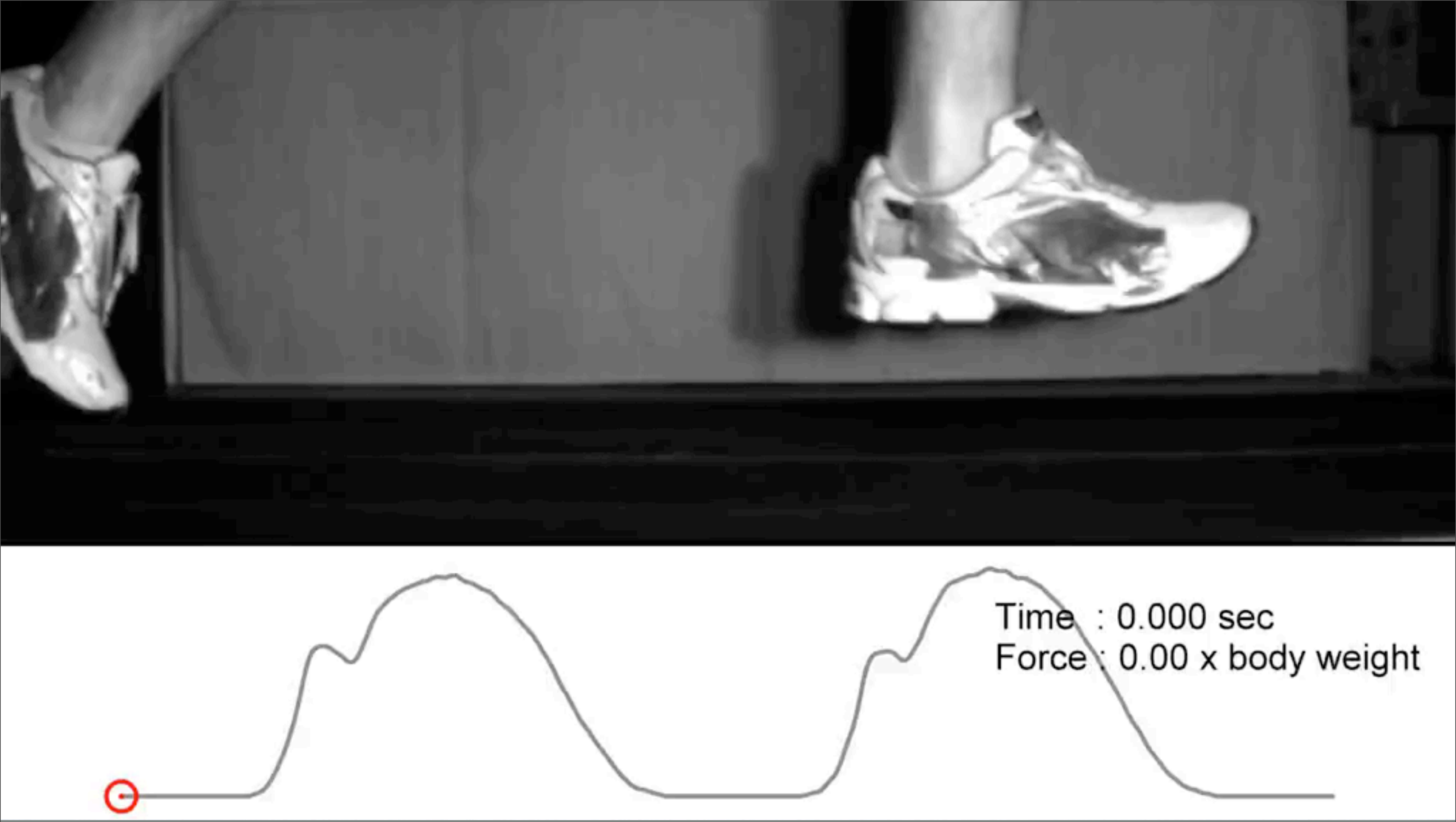

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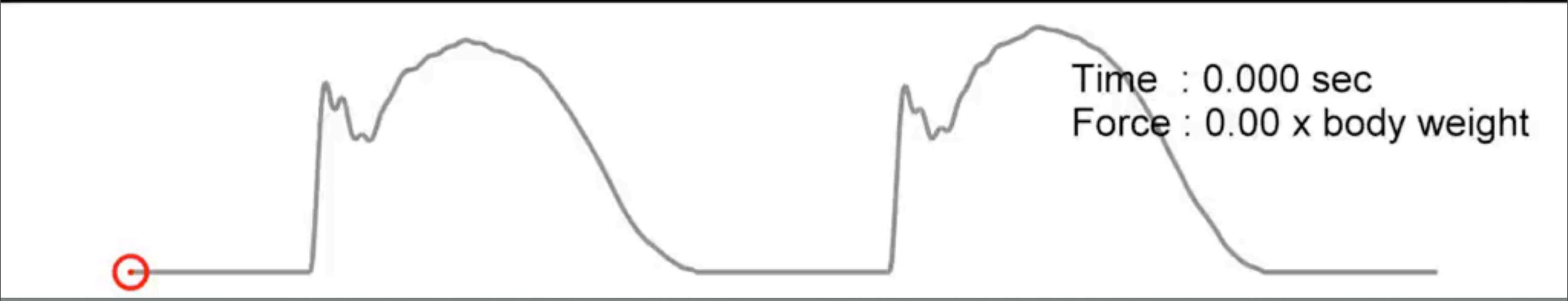

HEEL STRIKE BAREFOOT

(N.B THESE TEST ARE PERFORMED ON A TREADMILL)

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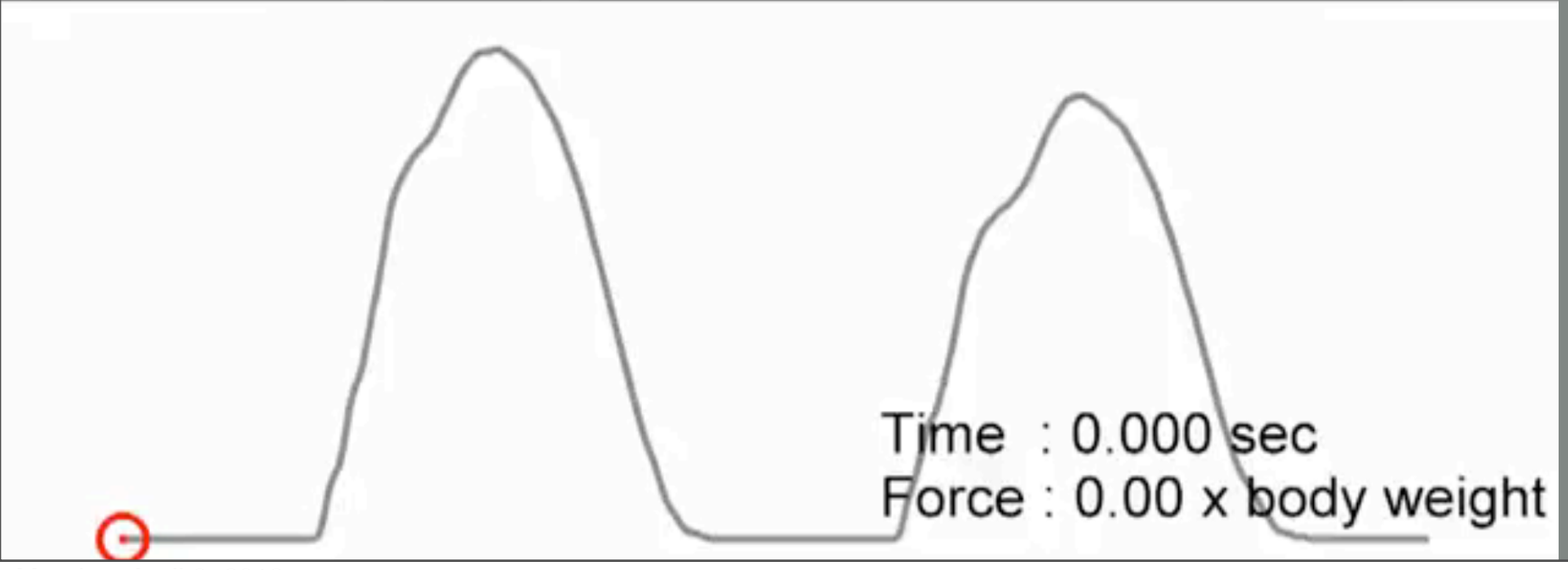

MIDFOOT STRIKE BAREFOOT

(N.B THESE TEST ARE PERFORMED ON A TREADMILL)

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MIDFOOT STRIKE
BAREFOOT

(N.B THESE TEST ARE PERFORMED ON A TREADMILL)

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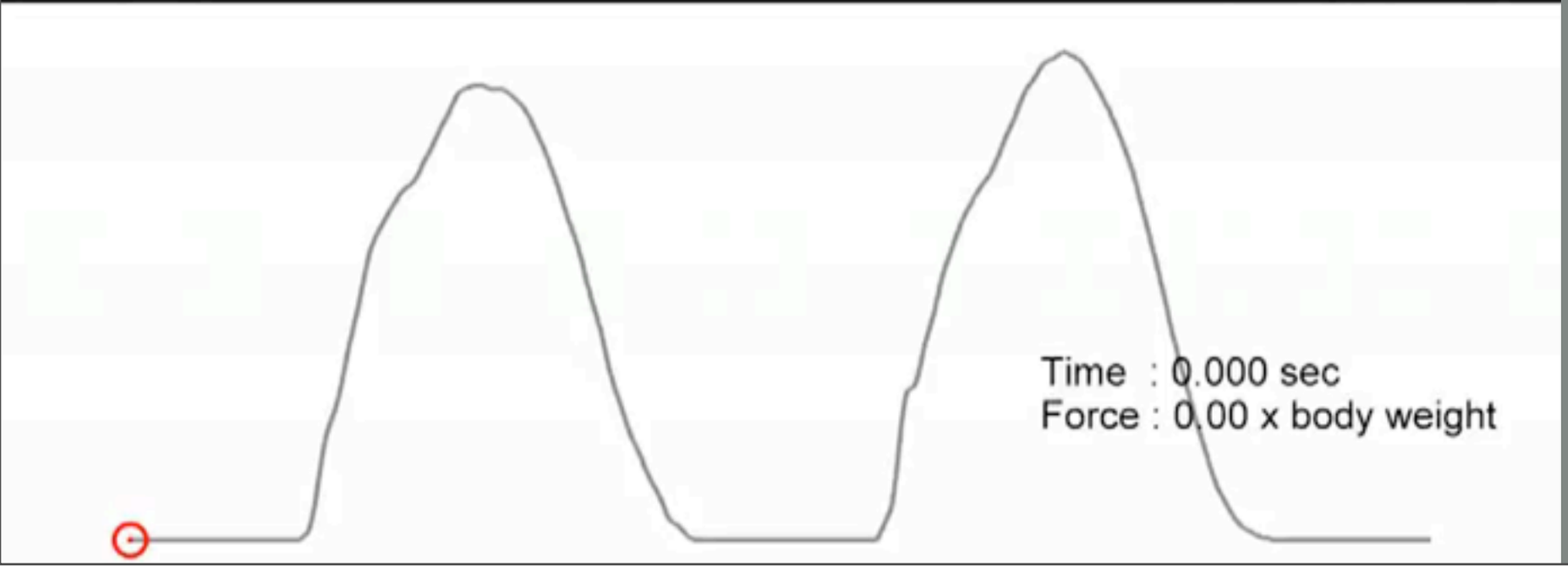

MIDFOOT STRIKE RACING FLATS

(N.B THESE TEST ARE PERFORMED ON A TREADMILL)

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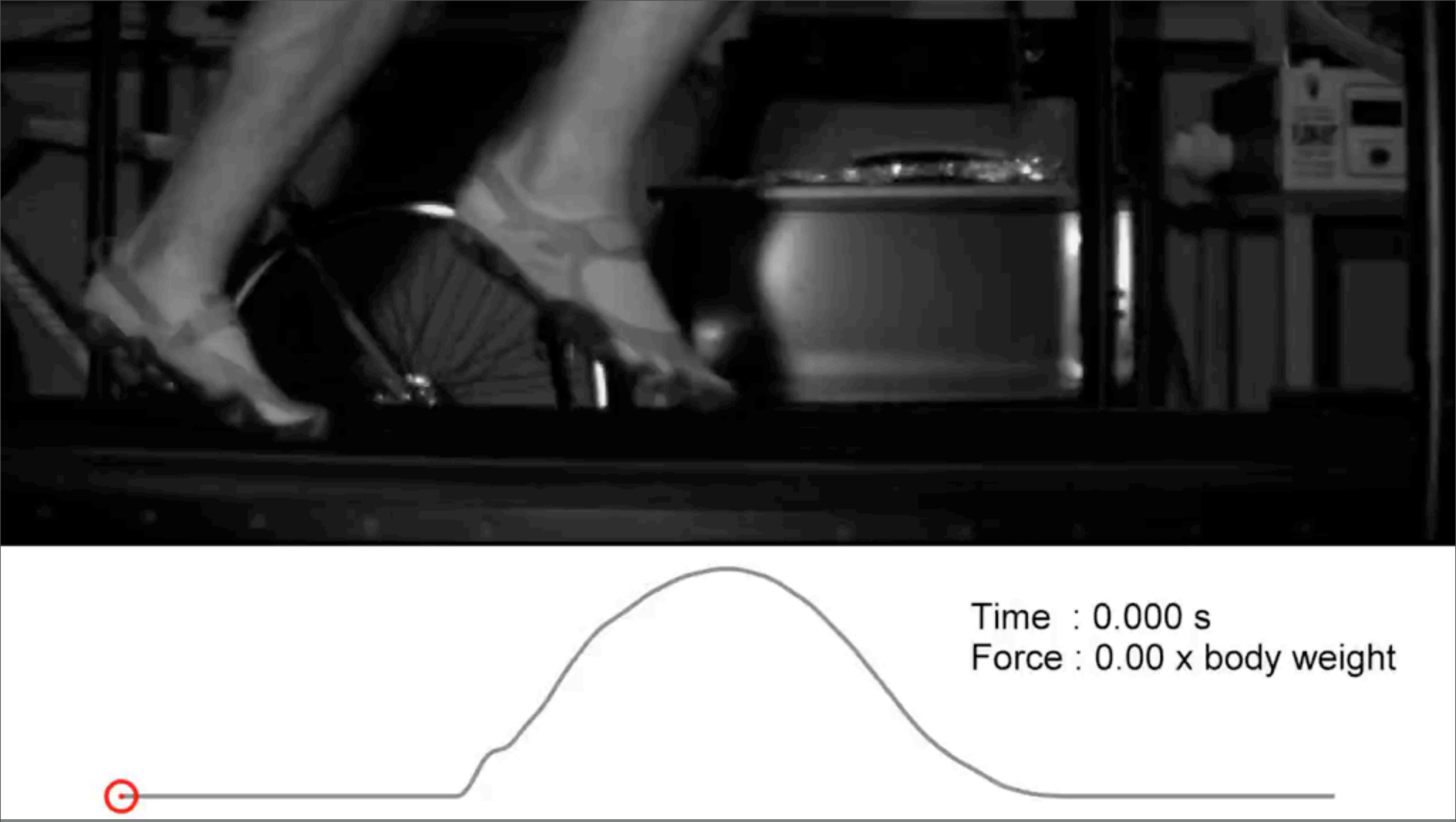

MIDFOOT STRIKE
VIBRAM FIVE FINGERS

(N.B THESE TEST ARE PERFORMED ON A TREADMILL)

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Applications

FOOT / ANKLE PREPARATION

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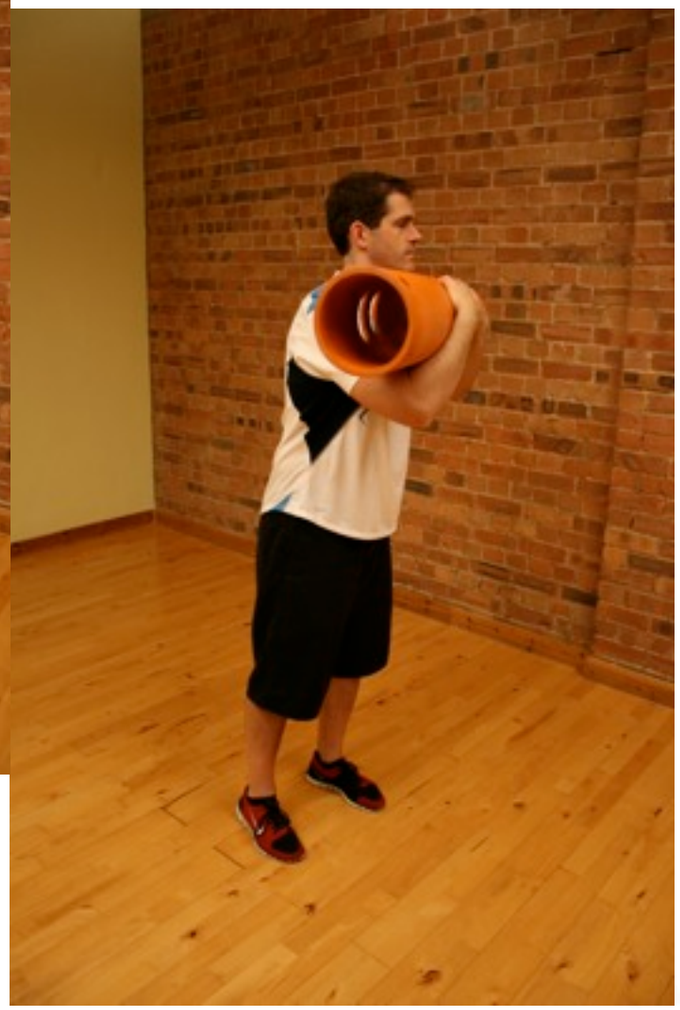
FOOT / ANKLE PREPARATION

FOOT / ANKLE TRAINING



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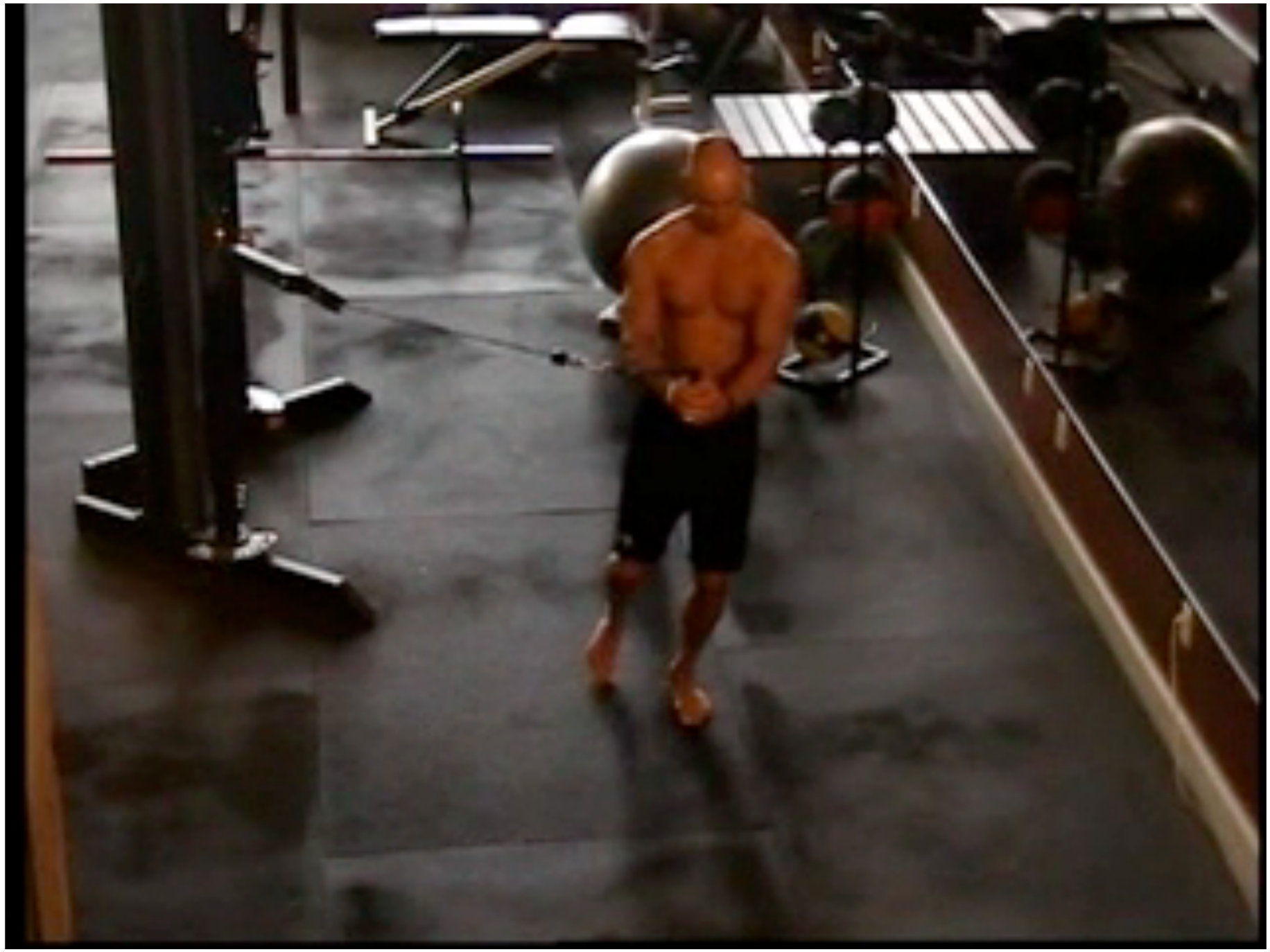

FOOT / ANKLE TRAINING

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SHOE GUIDELINES

Narrow Heel Cushion	- the heel cushion should not be wider than the body of the heel, this would increase the moment arm and produce early and excessive pronation
Rearfoot / Forefoot Height Consistency	- a plantarflexed foot will jam the Talo-Crural joint and minimize loading and energy transfer. It will also exacerbate a valgus hallux
Minimal Cushion	- if the shoe has too much cushion, it will 'buffer' the kinetic pulse of GRF and insufficient energy will be transferred into the body
Purposeful	- does it serve the purpose for which it is designed? - consistent with wearer's physiological state?
Adequate Forefoot Space	- having a narrow shoe or lacing up the shoe too tightly impedes the navicular, medial cuneiform and mid-tarsal joint from moving; thus limiting loading of the foot and sub-talar joint. - also important to note that inadequate forefoot space will create a valgus hallux
Minimal Stiffness	- a shoe that is too stiff will impede proper arthrokinematics

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Thank you

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- Institute of Motion - Courses and Videos available